Website Design of Monitoring and Controlling Shelter BTS System

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Abstract - Along with technological advances, people wants to be facilitated in using the monitoring and control applications. Application monitoring and control can be done easily and can be used to view the monitoring of an object from a distance. One of the main applications that can help in the field of monitoring and control is a Monitoring and Control System BTS Shelter. This monitoring and control can do by an admin from the another place.
An admin can perform condition monitoring BTS shelter simply by opening the application site via a PC (Personal Computer) or a gadget which has connection to the internet. The test results is shown that system designed have been successful to monitor and control the BTS shelter remotely using a web-based application.

Keywords: Monitoring, Controlling, Internet, Shelter BTS.

I. INTRODUCTION

Advances in technology led ideas and innovation in making an application that is useful to enable people to do activities. One of innovation in the field of technology is a system of monitoring and control shelter BTS (Base Transceiver Station). An operator that charge for monitoring and controlling the BTS shelter can do it wherever he is. With the presence of this system monitor becomes easy and efficient, including the efficiency of time. An operator can monitor the condition of the shelter BTS simply by opening the application via a PC (Personal Computer) or a gadget that is connected to the internet. The system is also useful at the time efficiency, because an operator does not need to visit the shelter BTS only for see the condition of the connected devices in the shelter BTS. Shelter BTS is as a protective shield telecommunications infrastructure or base stations to prevent damage and hazards to the BTS [1]. This research, developed a research that has been done before that is Design of BTS Shelter Monitoring Device [2].
Devices that connected to the BTS shelter is DHT11 that read of temperature and humidity, LED that function as lighting a room of shelter, the fan function as cooling a room of shelter, LCD (Liquid Cristal Display) function for displays the temperature and humidity, RFID (Radio Frequency Identification) function to read the key tag, solenoid serves as a key, and the switch serves as a comparison to give warning of danger at the door.

II. BASIC THEORY

A. Shelter BTS

Shelter by definition is something that can provide protection against a damage, while the BTS (Base Transceiver Station) is a telecommunications infrastructure that facilitates wireless communication between communication devices and network operators [1].
From the above definition BTS shelter can be interpreted as a protective shield telecommunications infrastructure or base stations to prevent damage and hazards to the BTS. Devices connected to the shelter BTS is DHT11 that serves as reading temperature and humidity, LED serves as lighting the room shelter, fan serves as the air conditioner shelter, LCD (Liquid Cristal Display) function displays the temperature and humidity, RFID (Radio Frequency Identification) function to read the key tag, solenoid serves as a key, and switch functions as a comparator to provide a hazard warning status door that the door is opened improperly.
The data is monitored from the shelter BTS including the temperature to detect normal or not the temperature conditions at the shelter BTS, humidity to detect humidity in the shelter BTS, the doors to detect if any threats forced open by someone who is not responsible, power shelter BTS to detect whether electricity shelter BTS are switched on or off. Besides being able to perform the monitoring system can also control the BTS shelter. The device can be in control of the system is the fan that serves as the air conditioner BTS shelter if the temperature detected in pretty hot.

B. HTML

HTML is abbreviation from Hypertext Markup Language. Referred to Hypertext Markup Language because the HTML structure using sign language (mark) to mark parts of the text which is known as a sign of an HTML tag [3]. HTML is the beginning of the creation of a website. To create a website, HTML used in making the layout or design template of a web page.

C. CSS

CSS (Cascading Style Sheets) is a collection of program code that is used to define the design of the markup language, where in the markup language is HTML [4]. With CSS a web designer can change the design of the text, colors, images, and backgrounds of almost all code HTML tags.

D. JavaScript

JavaScript is a scripting language that is popular on the internet and can work in a web browser, such as Internet Explorer (IE), Google Chrome, and Mozilla Firefox. JavaScript code can be inserted in a web page using the SCRIPT tag and also can be made in a separate file with the extension .js.

E. PHP

PHP is a programming language server-side script that is designed for web development. PHP is known as server side programming languages because PHP is processed on the server computer [5].

F. MySQL

MySQL is a SQL database management system that is open source. MySQL database system supports several features like multithreaded, multi-user, and database management system (DBMS). MySQL database created for the purposes of a database system that is fast, reliable, and easy to use [6].

III. DESIGN

A. System Design

In this final task that done is design a monitoring system and controlling shelter BTS.

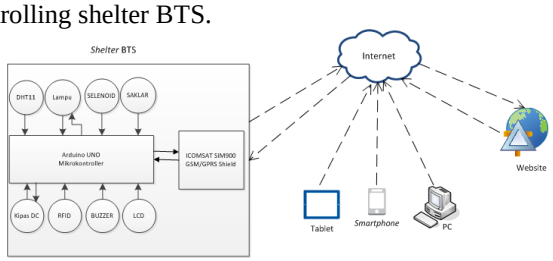

Figure 1 Block Diagram Monitoring and Control System BTS Shelter

In the Figure 1 block diagram monitoring and control system is described that the shelter BTS sends monitoring data to the web hosting through IComsat module SIM900 GSM / GPRS Shield that further the monitoring data is sent and received to web hosting and stored into a MySQL database. Web hosting also send control commands to shelter BTS passes IComsat module SIM900 GSM / GPRS Shield and then the commands executed by the microcontroller Arduino Uno which located in the shelter BTS.

B. Design Software

Data Context Diagram

Diagram Context Data Monitoring and Control System BTS Shelter shown on Figure 2.

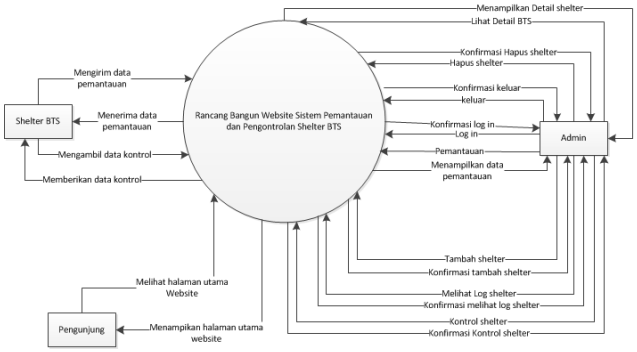

Figure 2 DCD Monitoring and Control System BTS Shelter

DFD Level 1

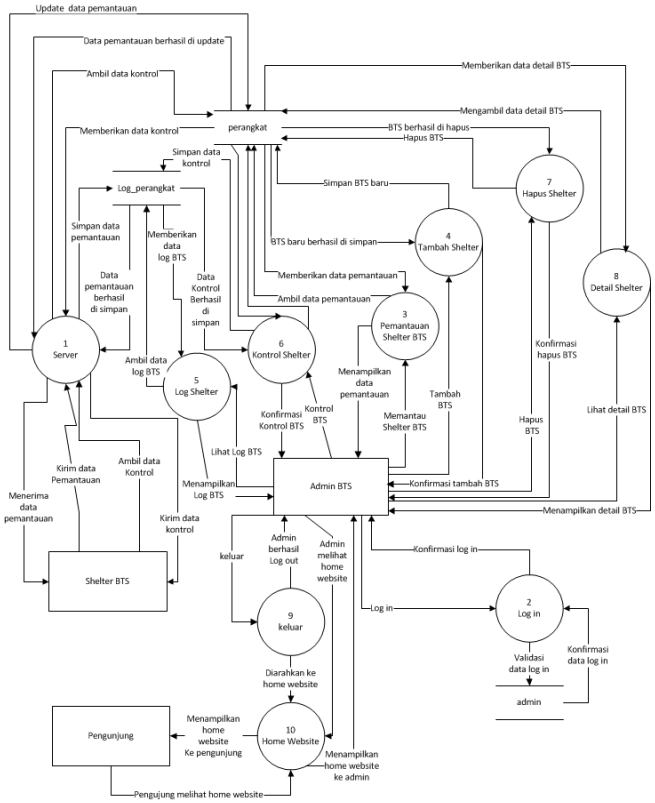

Figure 3.4 DFD Level 1 Monitoring and Control System BTS Shelter

IV. TEST RESULTS AND ANALYSIS

A. Interfaces Implementation

Interface Implementation Monitoring and Control System Shelter BTS has successfully made on the basis of system design that has been described in the part of system design. Interface display On Website shown on Figure 3.

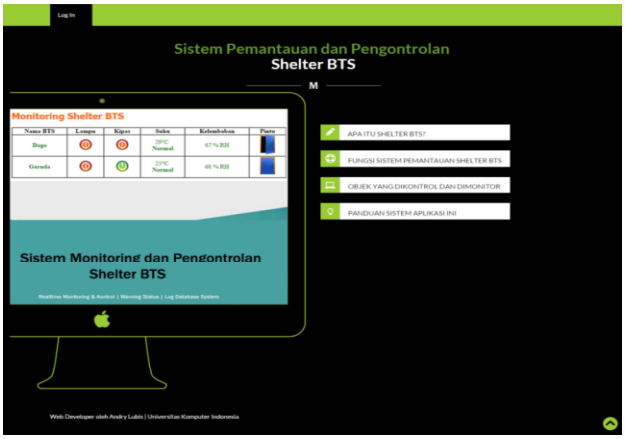

Figure 3 Display Home Website

And administrator menu is shown on Figure 4.

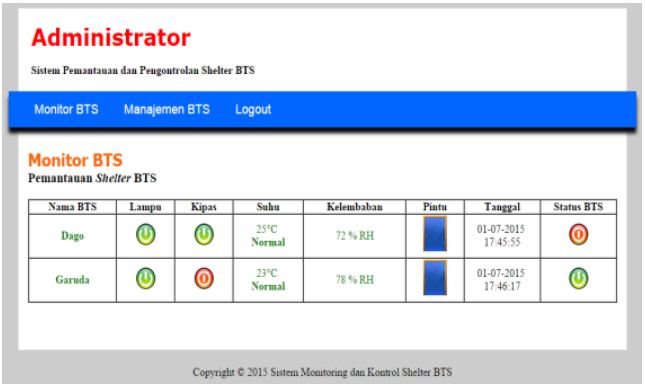

Figure 4 Display Menu Monitor BTS

B. Testing of System

Testing of the system is to determine the function of the system that has been designed, whether the system is functioning as expected or still in a failure (error). To do testing of the system that has been designed is to use alpha testing.

Testing Alpha

Alpha testing is a test that used to determine the function of the system have been made. To do this test is by doing black-box testing methods. Black-box method is a test conducted to determine whether or not a function of software that has been successfully created. The result is shown on table 1, table 2, table 3, table 4 and table 5.

Table 1 Testing of System Monitoring and Control Shelter BTS

Testing Menu	Testing Detail	Type of Testing
Login	Login as Admin/ Operator	Blackbox
Monitor BTS	View Monitoring Data	Blackbox
	Warning control the danger door	Blackbox
BTS management	Display the sub menu of BTS Management	blackbox
Add BTS	Adds BTS	blackbox
Log BTS	View Log Shelter BTS	blackbox
Control BTS	Controlling shelter BTS	blackbox
Delete BTS	Deleting BTS	blackbox
BTS detail	View the Detail of BTS and edit the BTS detail	blackbox
Logout	Admin/ operator logout/ out of the system	blackbox

Table 2 Testing of Login Operator

Cases and Test Result			
Action	Expected	Observation	Conclusion
Input the username: From the table admin Password: From the table admin	Go to the page to log in administrators	Operator Testing is success go to the page to log in administrators	Functioning
Click the login button	Verifying the username and password data	Login button function properly	Functioning

Table 3 Testing of Monitor BTS

Cases and test result			
Action	Expected	Observation	conclusion
Select the menu Monitor BTS	Displays the status of lights, fans, temperature, doors, update date, BTS status, and displays the warning of temperature danger and danger door.	Can display the status of lights, fans, temperature, door, date of update, the status of the BTS, and displays the temperature danger warning and danger door	Functioning
Click stop button to temperatures hazard warning tones	Warning tones temperature stop	Warning temperature tones success to stop	Functioning

Table 4 Testing of BTS Management

Cases and test result			
Action	Expected	Observation	Conclusion
Select menu of Management BTS	Display the sub menu of management BTS	Can Display the sub menu of management BTS	Functioning

Table 5 Testing of Add BTS

Cases and test result			
Action	Expected	Observation	Conclusion
Select menu of Management BTS	Display the submenu of Add BTS	Can display the submenu of Add BTS	Functioning
Click the icon Add BTS	Display form to added shelter BTS system	Can display form to added shelter BTS system	Functioning
Fill data in the form Add BTS	Filling data in the form Add BTS	Can Filling data in the form Add BTS	Functioning
Click the button of Add BTS	New BTS data successfully save to database	Can save the new BTS data to database	Functioning

V. CONCLUSIONS AND SUGESTION

A. Conclusion

As discussed in previous chapters then this research can be concluded that the Website Design of Monitoring and Controlling Shelter BTS System has successfully designed based on the results of testing.

B. Suggestion

The author gives suggestions for which will develop this research, namely:

1. Upgrade condition checking system on/off on each device BTS shelter, so it can determine which devices are experiencing interference on BTS shelter.
2. Adding a smoke alarm modules, rectifiers, generators, and batteries to provide extra security at the shelter BTS.
3. Create monitoring and control system with user friendly shelter BTS according to user needs.

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